

CLAIMS

1. A device for injecting a substance, comprising:
  - a) a pressure chamber for accommodating the substance;
  - b) a piston for expelling the substance from said pressure chamber;
  - c) a pressure mechanism for generating an expelling force; and
  - d) a transfer body coupled to said pressure mechanism, wherein in an initial position said transfer body is arranged at a distance away from a contact point for transferring the expelling force to said piston.
2. The device as set forth in claim 1, wherein said substance is a fluid.
3. The device as set forth in claim 1, wherein said device is a needle-less device.
4. The device as set forth in claim 3, wherein said device is suitable for directly injecting a substance exiting an expelling opening.
5. The device as set forth in claim 1, wherein the pressure mechanism is one of a spring, a pressurized gas and a hydraulic fluid device.
6. The device as set forth in claim 5, wherein the spring has a spring constant and a mass, and wherein at least one of the spring constant and mass can be varied.
7. The device as set forth in claim 1, wherein the transfer body and the piston have a mass, and wherein the mass of the transfer body and piston can be varied.
8. The device as set forth in claim 7, wherein the mass of the transfer body and the piston are varied via mass elements which may be coupled separately.
9. The device as set forth in claim 1, wherein the distance is constant before triggering the pressure mechanism.

10. The device as set forth in claim 9, wherein the distance is constant after evacuating the pressure chamber.
11. The device as set forth in claim 1, wherein the distance is in the range of 0.1 mm to 10 cm.
12. The device as set forth in claim 1, wherein the distance is in the range of 1 mm to 8 mm.
13. The device as set forth in claim 1, wherein the distance is in the range of 2 mm to 5 mm.
14. The device as set forth in claim 1, wherein a locking device is provided which prevents the pressure chamber from being filled and/or evacuated when the expelling opening of the pressure chamber is not held substantially upwards.
15. The device as set forth in claim 1, wherein the pressure chamber and/or the piston are disposable parts coupled to the device.
16. The device as set forth in claim 1, wherein a maximum pressure in the range of 150 to 400 bars and a dispensing pressure in the range of 50 to 150 bars can be generated using the device.
17. A method for injecting a substance, wherein a transfer body is freely accelerated for a distance and, after being accelerated, strikes a contact point and generates a pressure to expel the substance.
18. The method as set forth in claim 17, wherein said substance is a fluid.
19. The method as set forth in claim 17, wherein said pressure comprises an initial pressure in the range of 150 to 400 bars.
20. The method as set forth in claim 19, wherein said initial pressure is held for a time period of 0.5 to 2 msec.

21. The method as set forth in claim 19, wherein after the initial pressure, the pressure of the exiting fluid or substance decreases to a dispensing pressure in the range of 50 to 150 bars during a time period of approximately 3 to 150 msec.
22. The method as set forth in claim 17, wherein after the fluid or substance has been dispensed, the pressure of the exiting fluid or substance decreases to zero within a time period of 10 to 500 msec.
23. The method as set forth in claim 17, wherein after the fluid or substance has been dispensed, the pressure of the exiting fluid or substance decreases to zero within a time period of 100 to 200 msec.
24. The method as set forth in claim 17, wherein after the fluid or substance has been dispensed, the pressure of the exiting fluid or substance decreases to zero within a time period of 150 msec.
25. The method as set forth in claim 17, wherein the pressure comprises a pressure progression.
26. The method as set forth in claim 25, wherein the accelerated masses involved in expelling the substance are selected such that a pressure progression is created.
27. The method as set forth in claim 26, further comprising a pressure mechanism comprising a spring constant and spring mass.